THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OF PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1.   A method for identifying a chemical compound, analyzing a chemical composition or investigating a physical change of a sample comprising, obtaining spectra of electromagnetic radiation of the sample at two or more than two different temperatures.

2.   A method for identifying a chemical compound, analyzing a chemical composition or investigating a physical change of a sample comprising:

i)   collecting one or more than one spectrum of radiation of the sample at a first temperature and averaging the result to obtain a first spectrum, and obtaining one or more than one spectrum of radiation of the sample at one or more than one second temperature and averaging the result at each temperature, to obtain one or more than one second spectrum;

iii)   calculating a difference in absorbance between the first and the one or more than one second spectrum; and

iv)   using the difference in the absorbance, identifying a chemical compound, analyzing a chemical composition or investigating a physical changes of the sample.

3.   The method of claim 2, wherein in the step of calculating (step iii)), a negative decimal logarithm of a ratio of radiation intensity registered for the sample at the one or more than one second temperature to a radiation intensity obtained at the first temperature, is determined.

4.   The method of claim 2 wherein in the step of calculating (step iii)) comprises

a)   determining a mean value of registered spectra for each wavelength measured for the fist spectrum and the one or more than one second spectrum;

a)   calculating the standard deviation for each wavelength; and

b)   obtaining a ratio of the mean value to the standard deviation.

5.   The method of claim 2 wherein in the step of collecting (step i)), the temperature of the sample continuously changes between the first temperature, and the one or more than one second temperature.

6.   The method of claim 2, wherein the step of collecting (step i)), the temperature of the sample is changed in discrete manner between the first temperature and the one or more than one second temperature.

7.   The method of claim 2, wherein, in the step of calculating (step iii)), a running average, a standard deviation, and a relative thermal spectral change are calculated for sets of measurements, where each set of measurements are collected at the one or more than one second temperature, and determining a thermal dynamic of change in the sample

8.   The method of claim 2 wherein, the step of collecting (step i)), a spectral analyzer is used to obtained the first spectrum and the one or more spectrum, the spectral analyzer selected from the group consisting of a grating scanning spectrometer, a prism scanning spectrometer, a grating and prism spectrometers with detector arrays, a Fourier transform spectrometer, a filter switching spectrometer, a tuneable filter spectrometer, a Fabry-Perot scanning spectrometer, an acousto-optical tuneable filter and an instrument allowing for spectrum analysis.

9.   The method of claim 2 wherein, in the step of collecting (step i)), the first temperature and the one or more than one second temperature of the sample is adjusted outside of, or inside of, a sample compartment.

10.   The method of claim 2 wherein, in the step of collecting (step i)), the first temperature and the one or more than one second temperature of the sample result from radiation used for spectral analysis.

11.   The method of claim 2 wherein, in the step of collecting (step i)), the first temperature is lower than the one or more than one second temperature.

12.   The method of claim 2 wherein, in the step of collecting (step i)), the first temperature is higher than the one or more than one second temperature.